

WHAT IS CLAIMED IS:

1 1. A system for delivering content to a subscriber terminal on-demand
2 through a communication network, the system comprising:
3 a content preparation module for preencrypting the content offline to form pre-
4 encrypted content;
5 an on-demand module receiving the pre-encrypted content from the content
6 preparation module, for storing, and transmitting the pre-encrypted content to the subscriber
7 terminal when authorized;
8 an encryption renewal system interfacing with the on-demand module to
9 generate entitlement control messages allowing the pre-encrypted content to be decryptable
10 for a designated duration; and
11 a conditional access system for providing a periodical key to the encryption
12 renewal system, to permit generation of the entitlement control messages that convey
13 information required to decrypt the pre-encrypted content including the periodical key to the
14 subscriber terminal.

1 2. The system of claim 1 wherein the communication network is a cable
2 network for distributing audio/video content from a cable central office to all or a subset of
3 subscriber terminals.

1 3. A method of delivering content from one or more cable systems to
2 subscriber terminals within the cable systems, the cable systems being communicatively
3 coupled to an offline encryption device, the method comprising:

4 receiving by a first cable system, a request for the content from a first
5 subscriber terminal of the first cable system;

6 preencrypting, by the offline encryption device, the content to form pre-
7 encrypted content prior to the step of receiving a request;

8 generating an encryption record containing parameters employed for
9 encrypting the content;

10 based on the encryption record and a first key information, generating one or
11 more control messages for permitting access to the pre-encrypted content; and

12 transmitting the pre-encrypted content associated with the one or more control
13 messages to the first subscriber terminal for decryption of the pre-encrypted content.

1 4. The method of claim 3 further comprising
2 receiving, by a second cable system, a request from a second subscriber
3 terminal of the second cable system, and
4 based on the encryption record and a second key information, generating one
5 or more control messages for permitting the second subscriber terminal to access the pre-
6 encrypted content.

1 5. The method of claim 3 wherein the first key information is provided by
2 a conditional access system that uses the key information to control the first subscriber
3 terminal.

1 6. The method of claim 5 wherein the key information is for a key that is
2 periodical and valid for a designated duration.

1 7. The method of claim 6 wherein the designated duration is shortly
2 before, contemporaneous with, or shortly after the first key is changed by the conditional
3 access system.

1 8. The method of claim 3 wherein the one or more control messages is a
2 first entitlement control message for conveying information to the first subscriber terminal to
3 compute a key.

1 9. The method of claim 3 further comprising
2 changing the first key information after a designated duration, and reporting
3 the key change by the first cable system.

1 10. The method of claim 3 further comprising
2 retrofitting a second entitlement control message to the pre-encrypted content
3 for permitting access to the pre-encrypted content after the first key information expires.

1 11. The method of claim 10 wherein the retrofitting of the second control
2 message employs a second key information.

1 12. The method of claim 11 wherein the step of retrofitting the second
2 entitlement control message is synchronized with changing of a first key information to the
3 second key information.

1 13. The method of claim 3 further comprising
2 providing the parameters from an encryption renewal system that generates the
3 one or more entitlement control messages.

1 14. The method of claim 13 wherein the step of generating an encryption
2 record is by an offline encryption system.

1 15. The method of claim 4 further comprising
2 providing first and second service tiers in the first cable system to further limit
3 access to the pre-encrypted content.

1 16. The method of claim 15 further comprising
2 generating a first entitlement control message allowing the first subscriber
3 terminal to access the pre-encrypted content only in the first service tier, and
4 generating a second entitlement message allowing a second subscriber
5 terminal to access the pre-encrypted only in the second service tier.

1 17. A system for delivering first and second content to a subscriber
2 terminal on-demand through a communication network, the system comprising:

3 means for pre-encrypting the first and second content offline to form first and
4 second pre-encrypted content, and for generating a first encryption record associated with the
5 first pre-encrypted content, and a second encryption record for the second pre-encrypted
6 content;

7 means for generating a first and second entitlement messages that allow
8 decryption of the first and second pre-encrypted contents, respectively;

9 a conditional access system for providing information included in the first and
10 second entitlement messages by the means for generating; and

11 means for receiving the pre-encrypted content from the means for pre-
12 encrypting, forwarding the first and second encryption records to the means for generating
13 which generates the first and second entitlement messages for forwarding to the subscriber
14 terminal.

1 18. The system of claim 17 further comprising means for generating a
2 third entitlement message.

1 19. The system of claim 18 wherein the third entitlement message is for
2 permitting access to the first pre-encrypted content after expiration of the first entitlement
3 message.

1 20. A method using an encryption renewal system, the method permitting
2 first and second communication systems to control subscriber access to pre-encrypted content
3 that was previously encrypted offline, the method comprising:

4 receiving, by the encryption renewal system, a first cryptographic information
5 from the first communication system;

6 receiving an encryption record containing parameters employed during
7 encryption to form the pre-encrypted content; and

8 generating for the first communication system, a first control message for
9 providing access to the pre-encrypted content based on the first cryptographic information
10 and the first encryption record.

1 21. The method of claim 20 further comprising

2 receiving, by the encryption renewal system, a second cryptographic
3 information from the second communication system;

4 receiving the encryption record containing parameters employed during
5 encryption to form the pre-encrypted content; and

6 generating for the second communication system, a second control message
7 for providing access to the pre-encrypted content based on the second cryptographic
8 information and the encryption record.

1 22. The method of claim 20 further comprising generating a third control
2 message upon expiration of the first control message, to provide access to the pre-encrypted
3 content.

1 23. The method of claim 20 further comprising

2 retrieving entitlement control messages associated with the pre-encrypted
3 content; and

4 specifying a tier to which a subscriber is authorized when the pre-encrypted
5 program is purchased.

1 24. A system for delivering content to a subscriber terminal on-demand

2 through a point-to-point communication network, the system comprising:

3 an offline encryption system having software containing one or more

4 instructions for pre-encrypting the content to form pre-encrypted content before a content

5 request is received from the subscriber terminal;

6 a video on-demand system including software having one or more instructions

7 for receiving the pre-encrypted content from the offline encryption system, and forwarding

8 the pre-encrypted content to the subscriber terminal; and

9 an encryption renewal system interfacing with the offline encryption system to

10 provide encryption parameters for encrypting the content, and interfacing with the video on-

11 demand system to generate entitlement control messages allowing the pre-encrypted content

12 to be decryptable for a designated duration, wherein the entitlement control messages are

13 generated by using a periodical key.

1 25. The system of claim 24 further comprising a conditional access system

2 having software interfacing with a billing system to coordinate subscriber access to the pre-

3 encrypted content based on a subscriber purchase.

1 26. The system of claim 24 further comprising an interactive system

2 including software having instructions for providing two-way subscriber interaction between

3 the subscriber system and the video on-demand system.

1 27. The system of claim 24 further comprising one or more service tiers to

2 secure the pre-encrypted content.

1 28. The system of claim 24 wherein the encryption renewal system

2 generates first and second versions of an entitlement control message, for accessing the pre-

3 encrypted content in a first and a second tier, respectively.

1 29. The system of claim 24 further comprising

2 retrieving entitlement control messages associated with the pre-encrypted

3 content, and specifying the tier for which a subscriber is authorized when the pre-encrypted

4 program is purchased.

1 30. The system of claim 24 wherein the encryption renewal system
2 provides a call back mechanism indicating the next time by which the video on-demand
3 system should contact the encryption renewal system.

1 31. The method of claim 20 further comprising providing a call back
2 mechanism.

1 32. The method of claim 20 further comprising maintaining a list of first,
2 second and third communication systems and their addressing information.

1 33. The method of claim 3 wherein the step of pre-encrypting is carried out
2 using a third key, and the encryption record contains information about the third key.

1 34. The method of claim 33 further comprising translating the third key
2 into the first key information.

1 35. The system of claim 25 wherein the video on-demand system and the
2 conditional access system are decoupled.

1 36. The system of claim 25 wherein the video on-demand system and the
2 conditional access systems comprise a first cable system, each communicably coupled to the
3 encryption renewal system.

1 37. The system of claim 36 further comprising a second cable system
2 having a second conditional access system and a second video on-demand system each
3 communicably coupled to the encryption renewal system.

1 38. A method of delivering pre-encrypted content to subscribers from a
2 first and a second communication system the method comprising:
3 preencrypting the content once at a centralized facility, and prior to
4 distribution to the first and second communication systems;
5 if the first communication is authorized to receive the content, transmitting the
6 content to the first communication system;
7 storing the content by the first communication system;
8 if the second communication system is authorized to receive the content,
9 transmitting the content to the second communication system; and

